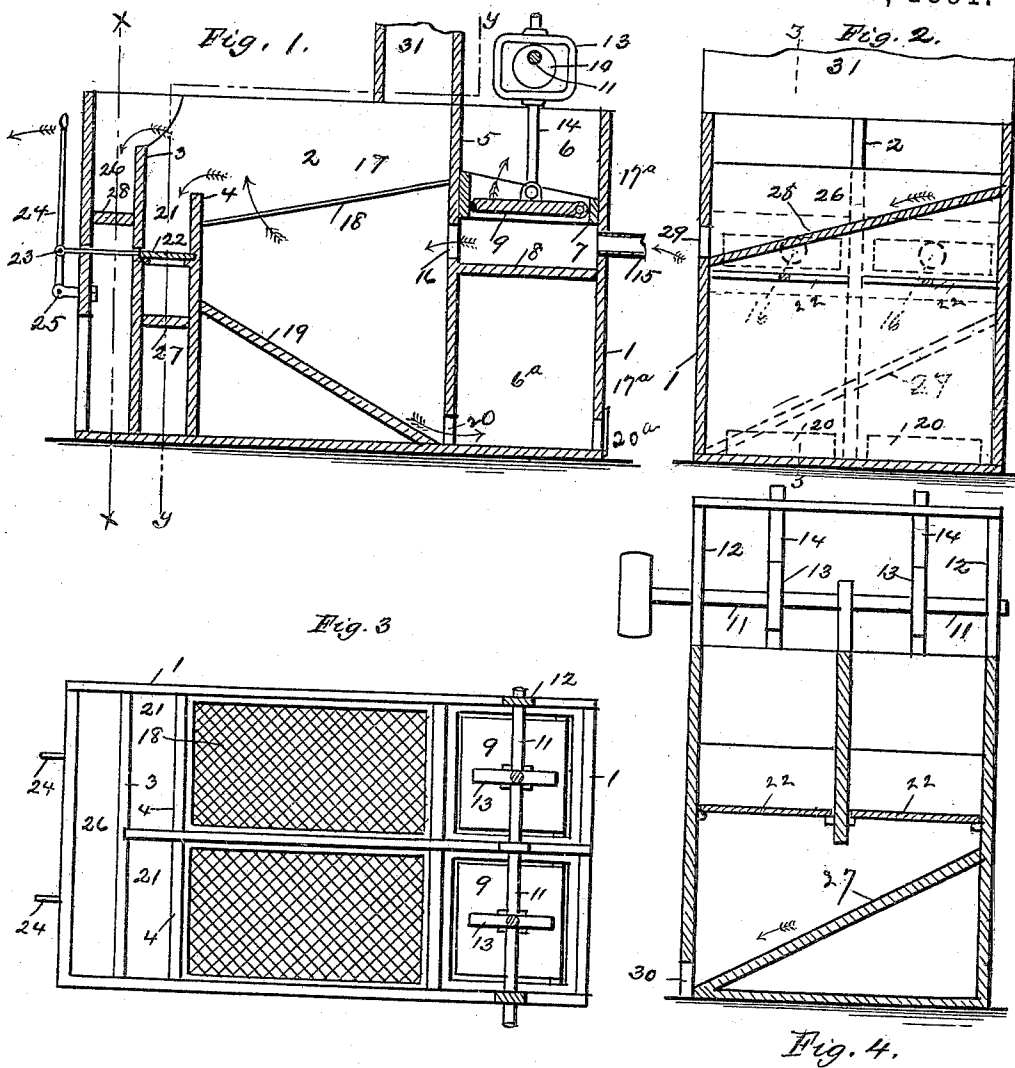


(No Model.)

C. H. LAUMAN.
COAL WASHING APPARATUS.

No. 464,881.

Patented Dec. 8, 1891.



Witnesses:
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UNITED STATES PATENT OFFICE.

CHARLES H. LAUMAN, OF PITTSBURG, PENNSYLVANIA.

COAL-WASHING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 464,881, dated December 8, 1891.

Application filed June 11, 1891. Serial No. 395,922. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. LAUMAN, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Coal-Washing Apparatus; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to an improved coal-washer; and it consists in certain details of construction and combination of parts, as will be fully described hereinafter.

In the accompanying drawings, Figure 1 is a sectional side elevation of my improved coal-washer, taken on the line *z z* of Fig. 2. Fig. 2 is a sectional end elevation through *x x* of Fig. 1. Fig. 3 is a plan view of my improved apparatus, and Fig. 4 is a sectional elevation through *y y* of Fig. 1.

To put my invention into practice I construct from suitable timber a large bin, forming the box or frame 1, and divide the same by a partition-wall 2, and thereby form a double washer. Arranged transversely across this bin are three partitions 3, 4, and 5, which divide each washer into four compartments 26, 21, 17, and 17^a. The compartment 17^a of each of these washers is divided by a horizontal partition 8 into sub-chambers 6 and 6^a, in the upper 6 of which is secured a square frame 7, located a short distance above the bottom 8, and in which a valve 9 is hinged. This valve 9 is operated by means of a cam 10, attached to a driving-shaft 11, arranged in proper bearings 12 and loosely connected to the said valve by an open link 13 and a connecting-rod 14. Beneath this valve 9 is an inlet-pipe 15 to supply water to the apparatus, and each chamber 6 is provided with an opening 16, communicating with the large central chamber 17. Arranged within each of these last-named chambers 17, in an inclined position, are screens 18, through which the sulphur from the coal drops onto an inclined bottom 19, and the same may be removed through two openings 20 and 20^a in each of the chambers 6^a. At the forward end of the

screen 18 is a narrow chamber 21, having slide-valves 22 arranged across the same, and the said valves operated by means of levers 24, connected by rods 23 and hinged to suitable bearings 25. Beneath these valves 22 is a transverse inclined bottom 27 to conduct the slate contained in the coal and discharge the same through an opening 30 at one side of the washer. Between this last-described chamber 21 and the end wall of the washer is another chamber 26 for the purpose of receiving the washed coal, and the said chamber is provided with a transverse inclined bottom 28, which conducts the coal to and through an opening 29 formed in the side of the washer. Arranged above the chamber 17 is a chute 31 for the purpose of conducting coal to the chamber 17.

In operation the coal to be washed is discharged through the chute 33 into the chamber 17 and the water forced into the chamber 6 through the pipe 15 and the valve 9 given a vertical movement by rotating the shaft 10. This motion of the valve 9 agitates and keeps the water in the apparatus in constant motion, thereby washing the coal over the partition 3 onto the inclined bottom 28, and the slate, being of a greater weight than the coal, is lifted over the partition 4, which is of less height, and into the chamber 21. The sulphur contained in the coal passes through the screen 18 and is conducted toward the openings 20 by means of the inclined bottom 19. When it is desired to remove the slate from the chamber 21, the lever 24 is moved in the direction indicated by the arrow, which moves the valve 22 and permits the slate to fall to the inclined bottom 27 and pass out of the opening 32.

By means of a washer such as described the sulphur and slate are kept separate and the coal thoroughly cleansed in a simple and efficient manner.

The screens 18, being inclined from the partitions 5 to the partitions 4 and secured to the latter near the upper ends thereof on a line with or but slightly above the planes of the openings 16 through which the water is forced into the chamber 17, direct the unwashed coal to said partition 4, so that practically the full force of the water is employed to lift the coal and slate above said partition and is not

needed to carry the coal from end to end of the chamber 17, and the valve 22 in chamber 21 prevents the constant escape of water from said chamber, which is extremely important, 5 in that when the water is permitted to constantly escape from said chamber there is the liability of an insufficient force being left to lift the coal, which has now been freed from sulphur and slate, over into the succeeding 10 chamber, and of the coal thereby being permitted to escape from the washer with the slate, which necessitates its subsequent separation therefrom.

Having thus described my invention, I 15 claim—

The herein-described coal-washer, consisting of a box or frame having therein the vertical transverse partitions 3, 4, and 5, dividing said box into a chamber 26, of less height 20 than the box, for the screened and washed coal, a chamber 21, of less height than said chamber 26, said chambers 26 and 21 having lateral openings leading to the outside, for slate, a chamber 17, in which the coal is

washed, a chamber 17^a, said chamber 17^a being 25 divided by a horizontal partition into two sub-chambers 6 and 6^a and communicating both above and below said partition with said chamber 17, an inlet 15 to said chamber 6, an outlet 20^a from said chamber 6^a, a valve 30 in said chamber 6 for forcing water therefrom into said chamber 17, an inclined screen 18 in said chamber 17, an oppositely-inclined bottom 19 beneath said screen leading to said opening 20, a valve 22 in said chamber 21, a 35 transverse inclined bottom beneath said valve leading to the opening from said chamber, means for operating said valve, and a transverse inclined bottom in said chamber 26, leading to the opening therefrom, all sub- 40 stantially as shown and described.

In testimony that I claim the foregoing I hereunto affix my signature this 3d day of June, A. D. 1891.

CHARLES H. LAUMAN. [L. S.]

In presence of—

CHARLES LARGE,
M. E. HARRISON.